CLAIMS

What is claimed is:

1. A guiding catheter system, comprising:

a flexible shaft having a distal end shaped for accessing a target vessel; and

a handle assembly movably coupled to the flexible shaft, the flexible shaft selectably movable between a plurality of discrete positions of a first degree-of-freedom defined relative to the flexible shaft, the flexible shaft restrained in the first degree-of-freedom at each position of the plurality of discrete positions, the flexible shaft movable through a predetermined displacement of a second degree-of-freedom defined relative to the flexible shaft at each position of the plurality of discrete positions; and

wherein motion of the flexible shaft relative to the handle assembly results in a controllable sweeping motion at the distal end of the flexible shaft.

2. The guiding catheter system of claim 1, wherein the first degree-of-freedom comprises a longitudinal displacement relative to the flexible shaft, and the second degree-of-freedom comprises an axial rotation relative to the flexible shaft.

3. The guiding catheter system of claim 1, wherein the first degree-of-freedom comprises an axial rotation relative to the flexible shaft, and the second degree-of-freedom comprises a longitudinal displacement relative to the flexible shaft.

4. The guiding catheter system of claim 1, further comprising a tightening member provided between the flexible shaft and the handle assembly, the tightening member providing a releasable coupling between the flexible shaft and the handle assembly.

5. The guiding catheter system of claim 4, wherein the flexible shaft is slidably positionable relative to the handle assembly in a released orientation of the tightening member, thereby allowing the flexible shaft to be adjustably positioned relative to the handle.

6. The guiding catheter system of claim 4, wherein the tightening member comprises a rotating hemostatic valve seal.

7. The guiding catheter system of claim 1, wherein the handle assembly comprises:

a housing; and

a guide member attached to the flexible shaft, the guide member restrained in the first-degree-of freedom relative to the housing at each position of the plurality of positions and movable relative to the housing through the displacement of the second degree-of-freedom at each position of the plurality of positions.

8. The guiding catheter system of claim 1, wherein the handle assemble comprises a guide member attached to the shaft, and a housing movable coupled to the guide member via a slot and pin arrangement.

9. The guiding catheter system of claim 8, wherein the slot and pin arrangement includes a serpentine slot provided on the guide member slidably coupled to a pin provided on the housing.

10. The guiding catheter system of claim 8, wherein the slot and pin arrangement includes a serpentine slot provided on the housing slidably coupled to a pin provided on the guide member.

11. A method of locating a destination vessel, comprising:

introducing a catheter shaft into an access vessel that provides access to the destination vessel;

repeatedly performing, until the destination vessel is located by a distal end of the catheter shaft, steps comprising,

mechanically restraining a proximal end of the catheter shaft from travel in a first degree-of-freedom relative to the catheter shaft at one of a plurality of positions of the first degree-of-freedom; and

moving the proximal end of the catheter shaft through a mechanically limited displacement of a second degree-of-freedom defined relative to a centerline of the catheter shaft; and

cannulating the destination vessel with the distal end of the catheter shaft.

12. The method of claim 11, wherein the first degree-of-freedom comprises a linear displacement relative to a centerline of the flexible shaft, and the second degree-of-freedom comprises an axial rotation relative to the centerline of the flexible shaft.

13. The method of claim 11, wherein the first degree-of-freedom comprises an axial rotation relative to a centerline of the flexible shaft, and the second degree-of-freedom comprises a linear displacement relative to the centerline of the flexible shaft.

14. The method of claim 11, wherein mechanically restraining the proximal end of the catheter shaft from travel through the first degree-of-freedom comprises mechanically restraining the proximal end of the catheter shaft from travel through the first degree-of-freedom via a handle assembly movably coupled to the catheter shaft.

15. The method of claim 14, further comprising adjustably locating the handle assembly on the proximal end of the catheter shaft.

16. The method of claim 11, wherein moving the proximal end of the catheter shaft through the mechanically limited displacement of the second degree-of-freedom comprises moving the proximal end of the catheter shaft through the mechanically limited displacement of the second degree-of-freedom via a handle assembly movably coupled to the catheter shaft.

17. The method of claim 16, further comprising adjustably locating the handle assembly on the proximal end of the catheter shaft.

18. A catheter assembly, comprising:

a flexible shaft having a distal end shaped for accessing a target vessel;

means for selectably moving the shaft between a plurality of discrete positions of a first degree-of-freedom defined relative to the flexible shaft;

means for restraining a motion of the shaft in the first degree-of-freedom at each position of the plurality of discrete positions; and

means for moving the flexible shaft through a second degree-of-freedom defined relative to the flexible shaft at each position of the plurality of discrete positions.

19. The catheter assembly of claim 18, wherein the first degree-of-freedom comprises a linear displacement relative to the flexible shaft, and the second degree-of-freedom comprises an axial rotation relative to the flexible shaft.

20. The guiding catheter system of claim 18, wherein the first degree-of-freedom comprises an axial rotation relative to the flexible shaft, and the second degree-of-freedom comprises a linear displacement relative to the flexible shaft.